UGR scientists participate in the design of a new ventilator that can be mass-produced for COVID-19

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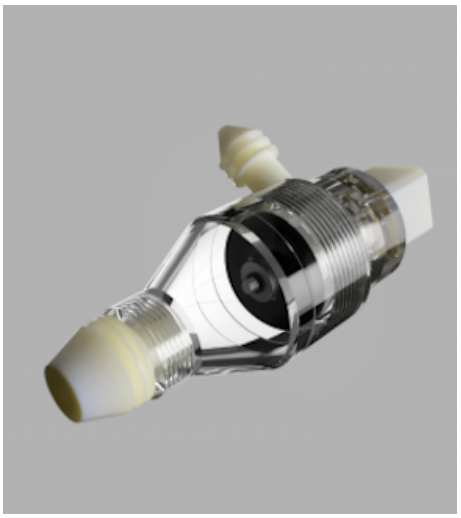
Research news



- The University of Oviedo is coordinating the development of this new ventilator, which has been successfully tested on animals and is currently being studied by the Spanish Agency of Medicines and Medical Devices (AEMPS)
- Furthermore, the UGR researchers have proposed conducting a clinical trial to the AEMPS that would employ a drug currently used as an antitumor agent but which also has a strong antiviral effect against many viruses, including other coronaviruses, as well as hepatitis B and C, Ebola and AIDS

An interdisciplinary research group of engineers, biologists and doctors at the University of Granada (UGR) is designing the valves that control the pressure and oxygen flow of the REESpirator23, which is a ventilator model developed by the University of Oviedo that should be used as a last resource.

This ventilator, designed to assist COVID-19 patients, has been successfully tested on animals and is currently being studied by the Spanish Agency of Medicines and Medical Devices (AEMPS).

The Granada-based group began by calculating and prototyping valves that could be produced on a large scale within a few days. Moreover, the group is designing a new model that could be much simpler, more robust, and easier to produce rapidly on a scale of hundreds or thousands of units.

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The group is coordinated by Guillermo Rus and Juan Antonio Marchal, who are full professors at the UGR. It features more than 10 researchers involved in their respective groups from the Andalusian Plan for Research, Development and Innovation (PAIDI), including TEP959-Ultrasonics Lab and CTS963-Advanced Therapies: Differentiation, Regeneration and Cancer. Both groups are members of the Biohealth Research Institute in Granada (ibs.GRANADA). The researchers are working voluntarily on these initiatives and are strongly committed to providing solutions to tackle COVID-19.

Clinical trial with a drug

Furthermore, members of the UGR's CTS963 research group have proposed conducting a clinical trial to the AEMPS that would employ a drug currently used as an antitumor agent but which also has a strong antiviral effect against many viruses, including other coronaviruses, as well as hepatitis B and C, Ebola and AIDS, among others.

This project is led by María Ángel García Chaves and Juan Antonio Marchal, and involves the close collaboration of the virologist Mariano Esteban, who is also the Director of the Poxvirus and Vaccines Group at the Spanish National Biotechnology Centre (CNB), as well as Professor Juan de Dios Luna, from the Department of Statistics and Operational Research (UGR Faculty of Medicine).

Some doctors fighting COVID-19 on the front lines in Granada's hospitals are also involved in this project. In this category, we find Professor José Hernández Quero, Director of the Infectious Diseases Unit at "San Cecilio" University Hospital in Granada, as well as other members of the Biohealth Research Institute in Granada (ibs.GRANADA), to name but a few.

The main goal of this clinical trial is to reduce the number of COVID-19 patients admitted to hospital who will need assisted ventilation. The ultimate goal is to help relieve pressure on overwhelmed hospitals and, of course, to contribute to the improvement of patients' clinical condition and reduce death rates.

Video of the valve prototype designed at the University of Granada:

https://canal.ugr.es/wp-content/uploads/2020/04/Video-Valvula-PEEP-1.mp4

Images of the two UGR research groups participating in this project:

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